

What is claimed is:

1. A polymer composition comprising multistage polymer particles;

wherein each of said multistage polymer particles comprises:

a) a first polymer comprising:

i) a polymerized unit of a multiethylenically unsaturated monomer, and

ii) at least one pendant absorbing group selected from the group consisting of phosphorus acid groups, phosphorus acid full-ester groups, polyacid sidechain groups, and mixtures thereof,

wherein said first polymer has a glass transition temperature in the range of from -60°C to 35°C; and

b) a second polymer having a glass transition temperature in the range of from -60°C to 35°C, wherein said second polymer is substantially free of said at least one pendant absorbing group;

wherein the average weight ratio of said first polymer to said second polymer is in the range of from 1:2 to 1:20.

2. A composite particle comprising:

a) an inorganic particle having a surface; and

b) a plurality of multistage polymer particles attached to said surface of said inorganic particle, each of said multistage polymer particles comprising:

i) a first polymer comprising: a polymerized unit of a multiethylenically unsaturated monomer, and at least one pendant absorbing group selected from the group consisting of phosphorus acid groups, phosphorus acid full-ester groups, polyacid sidechain groups, and mixtures thereof, wherein said first polymer has a glass transition temperature in the range of from -60°C to 35°C; and

ii) a second polymer having a glass transition temperature in the range of from -60°C to 35°C, wherein said second polymer is substantially free of said at least one pendant absorbing group;

wherein the average weight ratio of said first polymer to said second polymer is in the range of from 1:2 to 1:20.

3. An aqueous composition, useful for preparing a dried coating, comprising:

a) a composite particle comprising:

i) an inorganic particle having a surface; and

ii) a plurality of multistage polymer particles absorbed on said surface of said inorganic particle, each of said multistage polymer particles comprising:

a first polymer comprising: a polymerized unit of a multiethylenically unsaturated monomer, and at least one pendant absorbing group selected from the group consisting of phosphorus acid groups, phosphorus acid full-ester groups, polyacid sidechain groups, and mixtures thereof, wherein said first polymer has a glass transition temperature in the range of from -60°C to 35°C; and

a second polymer having a glass transition temperature in the range of from -60°C to 35°C; wherein said second polymer is substantially free of said at least one pendant absorbing group;

wherein the average weight ratio of said first polymer to said second polymer is in the range of from 1:2 to 1:20; and

b) a binder.

4. The aqueous composition according to claim 3 having a volatile organic compound level of less than 50 gram per liter of said aqueous composition.

5. A multistage polymer particle comprising:

a) a first polymer comprising:

i) a polymerized unit of a multiethylenically unsaturated monomer, and

ii) at least one complementary functional group,

wherein said first polymer has a glass transition temperature in the range of from -60°C to 120°C; and

b) a second polymer having a glass transition temperature in the range of from -60°C to 35°C, wherein said second polymer is substantially free of said at least one complementary functional group;

wherein the average weight ratio of said first polymer to said second polymer is in the range of from 1:2 to 1:20.

6. A covalently bonded composite particle comprising:

- a) a pigment particle;
- b) a first plurality of reacted coupling agents, such that each one of said reacted coupling agents forms a first covalent bond with said pigment particle; and
- c) a second plurality of multistage polymer particles, each of said multistage polymer particles comprising:
 - i) a first polymer comprising:
 - a polymerized unit of a multiethylenically unsaturated monomer, and
 - a complementary functional group reacted to form a second covalent bond with a corresponding one of said first plurality of reacted coupling agents;
 wherein said first polymer has a glass transition temperature in the range of from -60°C to 120°C; and
 - ii) a second polymer having a glass transition temperature in the range of from -60°C to 35°C; wherein said second polymer is substantially free of said reacted complementary functional group; and
 wherein the average weight ratio of said first polymer to said second polymer is in the range of from 1:2 to 1:20.

7. An aqueous composition, useful for preparing a dried coating, comprising:

- a) a covalently bonded composite particle comprising:
 - i) a pigment particle;
 - ii) a first plurality of reacted coupling agents, such that each one of said reacted coupling agents forms a first covalent bond to said pigment particle; and
 - iii) a second plurality of multistage polymer particles, each of said multistage polymer particles comprising:
 - a first polymer comprising a polymerized unit of a multiethylenically unsaturated monomer, and a complementary functional group reacted to form a second covalent bond with a corresponding one of said first plurality of reacted coupling agents; wherein said first polymer has a glass transition temperature in the range of from -60°C to 120°C; and

a second polymer having a glass transition temperature in the range of from -60°C to 35°C; wherein said second polymer is substantially free of said reacted complementary functional group;
wherein the average weight ratio of said first polymer to said second polymer is in the range of from 1:2 to 1:20; and
b) a binder.

8. The aqueous composition according to claim 7 having a volatile organic compound level of less than 50 gram per liter of said aqueous composition.

9. An aqueous composition comprising polymer particles dispersed in an aqueous medium; wherein said polymer particles have pendant phosphorus acid full-ester groups.

10. A composite particle comprising:

- a) an inorganic particle having a surface; and
- b) a plurality of polymer particles absorbed on said surface of said inorganic particle, each of said polymer particles having a pendant phosphorus acid full-ester group.